



K-2 Mathematics Resources to Extend and Enrich the Core Curriculum Appropriate for High Ability Students

The Indiana Academic Standards define for Indiana teachers what the average Hoosier student should know and be able to do in order to be prepared for college and career. However, many teachers need to provide intervention methods and materials to differentiate instruction to support and meet the needs of their high ability math students. These identified students are in need of both accelerated and enriched experiences in the area of mathematics. This document is intended to introduce K-2 teachers of high ability math students to a variety of supplemental math resources that can be implemented in the classroom to complement the Indiana Academic Standards, as well as extend and enrich the core curriculum for high ability math learners. This document is not to be considered an exhaustive list of supplemental resources, but, rather, an introduction. In addition, the inclusion of titles and publishers in this document was decided upon by the author and does not imply endorsement by the Indiana Department of Education. The supplemental resources in this document are organized into six separate charts, the first five representing each one of the five Indiana Academic Standards for Mathematics strands and the sixth representing “Reasoning, Logic, Problem-Solving, Visual Spatial, and Strategic Thinking,” a category for supplemental resources that emphasize the mathematical processes of higher-level thinking more than content knowledge. The following is a description of the information provided in each chart:

Title

On each chart title, the content strand is identified in red type.

Resource

Each K-2 high ability math resource is listed in alphabetical order using the APA Citation Style. ISBN numbers and websites are included, when available. If a title is included in another strand chart, that is noted in this cell, as well.

Annotation

Each resource is briefly described as it applies to the featured strand on the chart. Ideas for classroom implementation may also be included in this section.

Differentiation Tip(s)

Several of the resources lend themselves to one or more of the following differentiation strategies, allowing the teacher to meet the needs of a wide range of ability levels within the classroom. If applicable, the differentiation tips are explained as they apply to the specific resource. The following is a general description of each differentiation tip:

Tiered Delivery: Using a resource containing multiple levels of challenge and matching an appropriately leveled task from that resource with an individual, partnership, or group of students.

Flexible Grouping: Arranging students in either like-ability or mixed-ability groups, whichever is appropriate to the objective, when using a resource that contains only one level of challenge.

Self-Pacing: Allowing students to move through an increasingly difficult resource at their own pace, usually using a method of teacher or student record keeping.

Choice: Offering tasks representing all difficulty levels from a resource and allowing students to choose which tasks they will complete.

Extend: In math, depending on the task at hand, the complexity level of an activity can be extended by using larger numbers, adding multiple operations, increasing the number of digits used, etc.

Correlating Indiana Academic Strand Standards

The *Indiana Academic Standards for Mathematics* focus on content, or *what* students should know or be able to do, within each of the five strands. These content standards can be found at www.doe.in.gov/standards/mathematics. Scroll down through the document and click on the PDF for any grade level, K-2, for a description of each academic standard number documented in this section of the chart. The standards are separated into the following five strands:

Number Sense (NS)

Computation and Algebraic Thinking (CA)

Geometry (G)

Measurement (M)

Data Analysis (DA)

Each standard is written as grade level first, strand second, and standard number third. For example, the third standard for ***Number Sense*** in second grade would be listed as “2.NS.3.”

If an academic standard is documented in this section of the chart, it is either implied that students have already mastered that standard and are applying it while engaged in the resource, or it has been determined that the teaching of that standard is touched on or covered in that resource. Only strand-specific standards are listed. For example, only “Number Sense” standards will be documented on the “Number Sense” chart. Several supplemental resources align with standards from more than one strand; in which case, the title will reappear on other applicable strand charts. While these supplemental resources align with the K-2 academic standards, they also require the use of higher-level thinking skills appropriate for supporting the needs of high ability mathematics students.

Correlating Indiana Process Standards

The *Indiana Process Standards For Mathematics* demonstrate the ways in which students should develop conceptual understanding of mathematical content, and the ways in which students should synthesize and apply mathematical skills. The following are the *Indiana Process Standards For Mathematics*:

PS.1: Make sense of problems and persevere in solving them.

PS.2: Reason abstractly and quantitatively.

PS.3: Construct viable arguments and critique the reasoning of others.

PS.4: Model with mathematics.

PS.5: Use appropriate tools strategically.

PS.6: Attend to precision.

PS.7: Look for and make use of structure.

PS.8: Look for and express regularity in repeated reasoning.

One can find the process standards explained in detail by going to www.doe.in.gov/standards/mathematics. Scroll down through the document and click on the PDF for any grade level, K-2, for a description of each process standard documented in this section of the chart.